BUTLER SCHOOL DISTRICT

Grade 2 Mathematics Curriculum

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Adapted from: New Jersey Student Learning Standards New Jersey Department of Education Instructional Units for Mathematics

> Reviewed by: Dr. Daniel R. Johnson, Superintendent Margaret Lynch, Supervisor of STEAM

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Butler School District 34 Bartholdi Avenue Butler, NJ 07405

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VISION

The Butler School District's Mathematics Department believes the future belongs to those who can think critically and communicate effectively. Our teachers are determined to provide students with the skills to analyze, adapt, collaborate, innovate, persevere and thrive in an ever-changing world. The Mathematics curriculum provides students with quality, rigorous instruction to help them become better readers, writers, speakers, and listeners. The rich, educational experience provided within the Butler School District will produce young adults with the foundation and preparation they need for the future. It is the goal to challenge each student to develop and extend mathematical proficiency through highest quality mathematics teaching and standard-based assessments that meet the learning needs of each student. Butler Mathematics students will become individuals who persevere in their pursuit of lifelong learning through a culture that appreciates the beauty and usefulness of math.

As a result of a Butler Mathematics education, students will be able to...

- Synthesize mathematical skills across disciplines
- Develop into confident mathematicians
- Learn at their own pace and advance their understanding in a variety of ways
- Collaborate with others and contribute productively and articulately
- Act responsibly and be accountable for actions, in person and online
- Effectively approach, analyze, plan, and apply appropriate strategies for problem solving in ambitious contexts with accommodations for those who need it.
- Persevere through difficult situations and tasks and maintain a growth mindset despite adversity.
- Draw on knowledge from a wide variety of mathematical topics with flexibility to approach the same problem from different mathematical perspectives or represent the mathematics in different ways.
- Evaluate situations, draw logical conclusions, and develop, describe and apply solutions.
- Construct and support arguments.
- Evaluate their own reasoning and critique the reasoning of others.
- Assess the reasonableness of a solution with respect to the given construct or problem context.
- Use effective communication to engage in peer collaboration, reflecting on whether or not a solution is viable.
- Create appropriate representations of mathematical situations across a variety of mediums. These models will support the student's ability to demonstrate and explain their mathematical understanding.
- Use mathematical tools to explore and deepen their understanding of mathematical concepts.
- Make effective choices regarding the use of any available tools.
- Make appropriate use of technology as a tool that is constantly changing and evolving.
- Attend to precision in their mathematical calculations and in their communication.
- Calculate accurately and efficiently and express numerical answers with a degree of precision that is appropriate to the given context.
- Develop precision in their use of mathematical language.

- Look closely to determine patterns and structures within mathematics.
- Make meaningful connections between their knowledge from previous experiences and the content they are currently exploring.
- Develop deep understandings of mathematical concepts such that these understandings become applicable building blocks for future learning.
- Use their mathematical understandings to make generalizations that apply to various mathematical circumstances.
- Identify patterns in mathematics that can be used to solve problems that are challenging relative to their learning comfort zone.
- Use generalizations to increase the efficiency and manageability of their work.
- Demonstrate growth mindset and grit in effectively approaching ever-rigorous problem solving.
- Apply appropriate strategies with differentiated levels of support.
- Be confident in participating in higher level discussions that will assess and advance the understanding of concepts.
- Learn mathematics through exploring and solving contextual and mathematical problems

COURSE OVERVIEW

The fundamental purpose of this course is to give second grade students an understanding of mathematical concepts and a solid mathematical foundation. The course focuses on building skills in the following key areas: comparing numbers by using place value, adding/subtracting numbers fluently, and strategies for solving multi-digit/multi-step problems. The Standards for Mathematical Practice are incorporated in each unit to ensure students are developing procedural fluency, problem solving skills, and productive dispositions towards Mathematics.

<u>GOALS</u>

New Jersey Student Learning Standards for Mathematics (Grade 2) New Jersey Department of Education Instructional Units for Mathematics

ASSESSMENT

Student learning will be assessed through a variety of formative, summative, benchmark, and alternative assessments.

SCOPE AND SEQUENCE

(Pacing Guide)

Unit of Study	Estimated Time
Unit 1	18 weeks
Unit 2	12 weeks
Unit 3	12 weeks
Unit 4	10 weeks

AFFIRMATIVE ACTION COMPLIANCE STATEMENT

The Butler Public Schools are committed to the achievement of increased cultural awareness, respect, and equity amongst our students, teachers, and community. We are pleased to present all pupils with information pertaining to possible career, professional, or vocational opportunities which in no way restricts or limits options on the basis of race, color, creed, religion, sex, ancestry, national origin, or socioeconomic status.

INTEGRATED ACCOMMODATIONS AND MODIFICATIONS

Students with IEPs, 504s, and/or Students at Risk of Failure Students read authentic texts and write authentic pieces at their independent and instructional reading levels. Individualized feedback is provided through conferences and small groups. The teacher utilizes visual and multi-sensory methods of instruction in addition to assistive technology when needed. Students are provided with graphic organizers and other scaffolded material. Modification of content and product may be deemed necessary based on student needs. Students are provided with testing accommodations and authentic assessments.

Gifted & Talented Students Students read authentic texts and write authentic pieces at their independent and instructional reading levels. Individualized feedback is provided to the student through conferences and small groups. Students are engaged through inquiry-based instruction to develop higher-order thinking skills. Activities are developed based on student interests and student goals. Students engage in real-world projects and scenarios.

English Language Learners Students read authentic texts and write authentic pieces at their independent and instructional reading levels. Individualized feedback is provided to students through conferences and small groups. Students are pre-taught vocabulary terms and concepts. Teachers engage students through visual learning, including the use of graphic organizers. Teachers use cognates to increase comprehension. The teacher models tasks and concepts, and pairs students learning English with students who have more advanced English language skills. Scaffolding is provided including word walls, sentence frames, think-pair-share, cooperative learning groups, and teacher think-alouds.

21ST CENTURY THEMES & SKILLS

Embedded in many of our units of study and problem based learning projects are the 21st Century Themes as prescribed by the New Jersey Department of Education. These themes are as follows:

- Global Awareness
- Financial, Economic, Business, and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy

CURRICULUM ADDENDA FOR SPECIAL EDUCATION

This curriculum can be both grade and age appropriate for special education students and serves as a guide for the special education teacher in line with the district's written philosophy of special education, as stated within Policy #6700 concerning Programs for Educationally Disabled Students. Based on the Child Study Team evaluation and consultation with the parent and classroom teacher, an individualized education plan may include modifications to content, instructional procedures, student expectations, and targeted achievement outcomes of this curriculum document in accordance with the identified needs of an eligible student. This educational plan will then become a supplement guide that the classroom teacher, parent, and Child Study Team will use to measure the individual student's performance and achievement.

CURRICULUM ADDENDA FOR ENGLISH LANGUAGE LEARNERS

This curriculum guide is appropriate and is implemented for all students according to age and grade, and is in line with the district's written philosophy of English language acquisition concerning Bilingual Instruction and English as a Second Language Programs. In accordance with the New Jersey Administrative Code 6A:15, the contents herein provide equitable instructional opportunities for English Language Learners to meet the New Jersey Student Learning Standards and to participate in all academic and non-academic courses. Students enrolled in a Bilingual and/or an ESL program may, in consultation with the classroom teacher and Bilingual and/or ESL teacher, receive modification to content, instructional procedures, student expectations and targeted achievement outcomes of this curriculum document in accordance with the students developmental and linguistic needs.

DIVERSITY AND INCLUSION

In alignment with the 2020 NJSLS, the Mathematics Curriculum materials will:

Cultivate respect towards minority groups to foster appreciation of their differences as well as their contributions to the advancement of mathematics

Analyze and appreciate the diverse contributions made in the past (scientifically, economically, politically, and socially) at both the state and federal level as exemplified through mathematics

Examine grade-level texts and resources that simultaneously highlight mathematics as well as the contributions made to it by those of different genders, ethnicities, and abilities.

Employ mathematics as a means of communication — whether in regard to empathy, inclusivity, or advocacy — in an effort to creatively inspire solutions for those with specific needs.

Engage in authentic learning experiences that motivate the acquisition and application of varied perspectives in mathematics

Facilitate the ability to communicate effectively through mathematics while applying content knowledge, interdisciplinary connections, and thinking skills to do so.

Foster active student participation in an inclusive culture that honors mathematicians of all genders, ethnicities, and abilities.

Analyze and develop an understanding of how scientific, economic, political, social, and cultural aspects of society influence new technological and mathematical processes.

Reflect on both personal and non-personal experiences aimed to promote empathy and inclusivity for all regardless of our differences.

UNIT

Unit 1: Place Value and Three Digit Addition and Subtraction Strategies

UNIT SUMMARY

In this unit, students will...

Be able to build place value understanding for three digit numbers by gaining insight about a number's representation of hundreds, tens, and ones. They will explore and extend their previous knowledge of number sequences to count within 1000. Students will solve both one- and two-step authentic word problems. They will do so by using concrete models, drawings, and strategies, as well as addition and subtraction within 100. In the future, they will use concrete models, drawings, and similar strategies to develop conceptual understanding of addition and subtraction within 1000. Lastly, students will use mathematical discourse to explain how and why the strategies work, while pursuing fluency of addition and subtraction within 20.

NEW JERSEY STUDENT LEARNING STANDARDS MATHEMATICS

Module A:

2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Module B:

2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.NBT.B.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.NBT.B.8 Mentally add 10 or 100 to a given number 100 – 900, and mentally subtract 10 or 100 from a given number 100 – 900.

2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operation.

2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

INTERDISCIPLINARY CONNECTIONS

New Jersey Student Learning Standards- English Language Arts:

RI.2.1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

RI.2.2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.

RI.2.3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

RI.2.7. Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

SL.2.2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

New Jersey Student Learning Standards- Science 2020:

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills (2020)

9.4.2.Cl.1: Demonstrate openness to new ideas and perspectives

9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem

9.4.2.CT.3: Use a variety of types of thinking to solve problems

9.4.2.GCA:1: Articulate the role of culture in everyday life by describing one's own culture and comparing it to the cultures of other individuals

9.4.2.IML.2: Represent data in a visual format to tell a story about the data

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.

8.1.2.AP.1: Model daily processes by creating and following algorithms to complete tasks.

8.1.2.AP.4: Break down a task into a sequence of steps.

8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.

21st CENTURY LIFE AND CAREER STANDARDS

Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success.

1. Act as a responsible and contributing community member and employee.

- 2. Attend to financial well-being.
- 3. Consider the environmental, social and economic impacts of decisions.
- 4. Demonstrate creativity and innovation.
- 5. Utilize critical thinking to make sense of problems and persevere in solving them.
- 6. Model integrity, ethical leadership and effective management.
- 7. Plan education and career paths aligned to personal goals.
- 8. Use technology to enhance productivity, increase collaboration and communicate effectively.
- 9. Work productively in teams while using cultural global competence.

9.1: Personal Financial Literacy		9.2 Ex	Career Awareness, 9.3: Career and Te oration & Preparation, Education		areer and Technical ation
A.	Civic Responsibility	an	d Training	A.	Agriculture
В.	Financial Institutions	A .	Career Awareness (K-2)	В.	Architecture
C.	Financial Psychology	В.	Career Awareness and	C.	Arts,A/V, Technology
D.	Planning and		Planning (3-5)	D.	Business Management
	Budgeting	C.	Career Awareness and	E.	Education
E.	Risk Management and		Planning (6-8)	F.	Finance
	Insurance	D.	Career Awareness and	G.	Government
F.	Civic Financial		Planning (9-12)	Н.	Health Science
	Responsibility			1.	Hospital & Tourism
G.	Credit Profile			J.	Human Services
Н.	Economic and			К.	Information Tech.

Government Influences I. Credit and Debt Management	 9.4 Life Literac Skills A. Creativity and B Critical Thin Problem-solving C. Digital Citized D. Global and Awareness E. Information Literacy F. Technology 	cies and Key nd Innovation king and g enship Cultural n and Media / Literacy	L. Law and Public Safety M. Manufacturing N. Marketing O. Science, Technology, Engineering & Math P. Trans./Logistics	
TECHNOLOGY STANDARDS				
 8.1: Computer Science A. Computing systems B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming 		8.2 Design Thinking A. Engineering Design B. Interaction of Technology and Humans C. Nature of Technology D. Effects of Technology on the Natural World E. Ethics & Culture		
ENDURING UNDERSTANDINGS		ESSENTIAL Q	UESTIONS	
 Learners will read, write, and compare three-digit numbers. Learners will explore the base-10 system. Learners will solve multi-step addition and subtraction word problems. 		 How can to identi three-di three-di three-di bundling hundred How can and stra problem How can strategie 	n we use place value attributes fy, analyze, and compare git numbers? n we compose and decompose git numbers by g/exchanging ones, tens, and ds? n we use models, drawings, attegies to solve authentic word as? n we use mental math es to solve problems?	
STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)				

Students are learning to/that...

Module A

- Skip-count by 5s, 10s, and 100s within 1000.
- Read and write numbers using base-ten numerals to 1000.
- Each digit in a three-digit number represents an amount of hundreds, tens, and ones.
- Place value is a base-10 system (ex: a bundle of ten tens is called a "hundred")

- Read and write numbers using expanded form to 1000.
- Compare two three-digit numbers using the symbols >, =, <.

Module B

- Use drawings and equations to solve a word problem.
- Solve one and two-step addition and subtraction word problems within 20.
- Only digits in the same place value can be added or subtracted to or from each other when solving three-digit problems.
- Sometimes it is necessary to exchange tens and/or hundreds when adding and subtracting three-digit numbers.
- Use and relate concrete models/drawings and a place value strategy to add and subtract within 1000.
- Use and relate concrete models/drawings and a strategy based on the relationship between addition and subtraction within 1000.
- Mentally add/subtract 10 or 100 from any given number between 100 and 900.
- Explain why addition and subtraction strategies work based on place value and properties of operations.
- Know all sums of two one-digit numbers.
- Add and subtract within 20 using mental strategies to improve fact fluency.

SUGGESTED ACTIVITIES

- Math Centers/Choice Boards
- ST Math
- Desmos Online Activities
- Partner Work
- 100 Facts Quiz (mental math)
- Interactive Powerpoints (Nearpod) --
 - Learning Doubles Facts Addition and Subtraction: <u>https://share.nearpod.com/e/epxm1aAL0db</u>
 - One-step adding/subtracting word problems (matching pairs): <u>https://share.nearpod.com/e/HwmGsOUK0db</u>
- Number Grids (add/subtract 10 to 2-digit or 3-digit numbers)
 - Extra practice with Number Grids:
 - https://www.mathplayground.com/hundreds_chart_patterns.html
- Fact Fluency:
 - Addition/Subtraction Bingo (timed): <u>https://toytheater.com/bingo/</u>
- Pencil and a Sticker
- Building toward fluency
- <u>Making 124</u>
- Largest Number Game
- Looking at Numbers Every Which Way
- Ordering 3-digit Numbers
- Choral Counting
- Small Group Projects

EVIDENCE OF LEARNING

Formative Assessments: Classroom Discussion Math Message (warm-up) Math Journal pages/Math Boxe Exit Slip/Home Links Checklists Peer Assessment Rubrics Participation and teacher obser Whiteboard Responses Think-Pair-Share	s vation	Summative As Unit Tests End-of-Trimest	ssessment: er Test
Benchmark Assessment: Star 360 Benchmark Unit Benchmarks		Alternative Assessments: Project Portfolio	
INSTRUCTIONAL RESOURCE	S		
Core Instructional Resource: Teacher Crea EnVision Nearpod Prese		Ited materials Supplemental Resources ST Math Choice Boards Nearpod IXL	
INTEGRATED ACCOMMODAT	TIONS AND MO	DIFICATIONS	
Special Education: Provide modified notes and access to extra copies online Provide oral reminders and check student work during independent work time Model skills/techniques to be mastered Check and sign assignment planner Preferential seating Pair visual prompts with verbal presentations Modified or scaffolded homework and classwork Extended time as needed Provide graphic organizers and study guides			dent work time
English Learners: Provide scaffolded assignments Pair visual prompts with visual Check and sign assignment pla Native Language translation (dictionary) Extended time for assignment a Highlight key vocabulary	s and assessme presentations inner peer, online ass and assessment	nts sistive technolog as needed	gy, translation device, bilingual

Use graphic organizers Provide verbal and written directions Preferential seating with a English-speaking peer

At Risk of Failure:

Check and sign assignment planner Encourage class participation and reinforce skills Model skills and assignments Extended to time to complete class work Preferential seating Provide extra help outside of class and 1:1 instruction when needed Communicate regularly with students' other teachers Provide positive feedback for tasks well done Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:

Pose higher-level thinking questions Provide higher level reading and writing materials for literacy based activities Probe student to extend thinking beyond the text or connect two or more texts Provide alternate or project-based assessments and assignments

Students with 504 Plans

Provide extended time as needed Modify length of writing assignment Provide short breaks within the lesson Provide scaffolding for students Utilize graphic organizers

UNIT

Unit 2: Counting, Addition and Subtraction Strategies

UNIT SUMMARY

In this unit, students will...

Continue to skip count by hundreds in efforts to develop counting skills to 1000. Students will explore the foundations of multiplication through the use of repeated addition. They will find the total number of objects arranged in rectangular arrays. Students will tell and write time to the nearest five minutes, half hour, and hour.

Addition and subtraction concepts will be reinforced in a variety of authentic contexts. Students will solve word problems involving dollar bills, quarters, dimes, nickels, and pennies. They will solve one- and two-step word problems and begin to add up to four two-digit numbers. Lastly, students will pursue addition/subtraction fluency within 20 or 100 using various mental strategies, as well as properties of operations.

NEW JERSEY STUDENT LEARNING STANDARDS MATHEMATICS

Module A:

2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.

2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

2.MD.C.7 Tell and write time from f and digital clocks to the nearest five minutes, using a.m. and p.m.

2.MD.C.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

Module B:

2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

INTERDISCIPLINARY CONNECTIONS

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2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

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- 2. Attend to financial well-being.
- 3. Consider the environmental, social and economic impacts of decisions.
- 4. Demonstrate creativity and innovation.
- 5. Utilize critical thinking to make sense of problems and persevere in solving them.
- 6. Model integrity, ethical leadership and effective management.
- 7. Plan education and career paths aligned to personal goals.
- 8. Use technology to enhance productivity, increase collaboration and communicate effectively.

9. Work productively in teams while using cultural global competence.			
9.1: Personal Financial Literacy J. Civic Responsibility K. Financial Institutions L. Financial Psychology M. Planning and Budgeting N. Risk Management and Insurance O. Civic Financial Responsibility P. Credit Profile Q. Economic and Government Influences R. Credit and Debt Management	 9.2: Career Awa Exploration & and Training G. Career Awa Planning (3) I. Career Awa Planning (6) J. Career Awa Planning (6) J. Career Awa Planning (9) 9.4 Life Literad Skills A. Creativity ar B Critical Thin Problem-solving C. Digital Citiza D. Global and Awareness K. Information Literacy L. Technology 	vareness, Preparation, areness and -5) areness and -8) areness and -12) cies and Key nd Innovation king and g enship Cultural n and Media y Literacy	 9.3: Career and Technical Education Q. Agriculture R. Architecture S. Arts,A/V, Technology T. Business Management U. Education V. Finance W. Government X. Health Science Y. Hospital & Tourism Z. Human Services AA. Information Tech. BB. Law and Public Safety CC. Manufacturing DD. Marketing EE. Science, Technology, Engineering & Math FF. Trans./Logistics
TECHNOLOGY STANDARDS			
 8.1: Computer Science A. Computing systems B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming 		8.2 Design Thi A. Engineering B. Interaction o C. Nature of Te D. Effects of Te E. Ethics & Cul	inking Design f Technology and Humans chnology cchnology on the Natural World ture
ENDURING UNDERSTANDINGS		ESSENTIAL Q	UESTIONS
 Learners will relate repeated addition to multiplication. Operations create relationships between numbers. The relationships among the operations and their properties encourage fact fluency. 		 How ca multiplic How do relate to How do operation 	n we show repeated addition or cation using arrays? mathematical operations o each other? I know which mathematical on (+, -, x, ÷, etc.) to use?

 There can be different strategies to solve a problem, but some are more effective and efficient than others are. The ability to solve problems is the heart of mathematics. 	 How do I know which computational strategy (mental math, estimation, etc.) to use? How do I decide which strategy will work best in a given problem situation? What is the relationship between solving problems and computation? Why is the ability to solve problems so significant in mathematics?
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STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)

Students are learning to/that...

Module A

- Skip count by fives, tens, and hundreds within 1000.
- Use repeated addition to find the total number of objects arranged in rectangular arrays.
- Write a repeated addition number model or a multiplication number model to express the total number of objects arranged in an array.
- Determine whether a group of objects is odd or even.
- Two equal addends will yield an equal sum by writing a number model.
- Tell time to the nearest five minutes using A.M. and P.M.
- Count combinations of dollar bills, quarters, dimes, nickels, and pennies using the \$ and ¢ symbols appropriately.
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using the \$ and ¢ symbols appropriately.

Module B

- Add/subtract within 20 using mental strategies.
- Add/subtract within 100 using strategies based on place value and/or the relationship between addition and subtraction.
- Use place value strategies and properties of operations to add four numbers that have two digits.
- Use drawings and equations to solve one- and two-step word problems within 100.

SUGGESTED ACTIVITIES

- Math Centers/Choice Boards
- ST Math
- Desmos Online Activities
- Partner Work
- 100 Facts Quiz (mental math)
- <u>Hitting the Target Number</u>
- Red and Blue Tiles
- Counting Dots in Arrays
- Partitioning a Rectangle into Unit Squares

 <u>Toll Bridge Puzzle</u> <u>How Many Days Until Summer Vacation?</u> <u>Peyton and Presley Discuss Addition</u> Small Group Projects Interactive Powerpoints (Nearpod) 			
EVIDENCE OF LEARNING			
Formative Assessments: Classroom Discussion Math Message (warm-up) Math Journal pages/Math Boxes Exit Slip/Home Links Checklists Peer Assessment Rubrics Participation and teacher observation Whiteboard Responses Think-Pair-Share		Summative Assessment: Unit Tests End-of-Trimester Test	
Benchmark Assessment: Star 360 Benchmark Unit Benchmarks		Alternative Assessments: Project Portfolio	
INSTRUCTIONAL RESOURCE	ES		
Core Instructional Resource: EnVision	Teacher Created materials		Supplemental Resources: ST Math Choice Boards Nearpod
INTEGRATED ACCOMMODAT	LIONS AND MO	DIFICATIONS	
INTEGRATED ACCOMMODATIONS AND MODIFICATIONS Special Education: Provide modified notes and access to extra copies online Provide oral reminders and check student work during independent work time Model skills/techniques to be mastered Check and sign assignment planner Preferential seating Pair visual prompts with verbal presentations Modified or scaffolded homework and classwork Extended time as needed Provide graphic organizers and study guides English Learners:			

Provide scaffolded assignments and assessments Pair visual prompts with visual presentations Check and sign assignment planner Native Language translation (peer, online assistive technology, translation device, bilingual dictionary) Extended time for assignment and assessment as needed Highlight key vocabulary Use graphic organizers Provide verbal and written directions Preferential seating with a English-speaking peer At Risk of Failure: Check and sign assignment planner Encourage class participation and reinforce skills

Model skills and assignments

Extended to time to complete class work

Preferential seating

Provide extra help outside of class and 1:1 instruction when needed

Communicate regularly with students' other teachers

Provide positive feedback for tasks well done

Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:

Pose higher-level thinking questions Provide higher level reading and writing materials for literacy based activities Probe student to extend thinking beyond the text or connect two or more texts Provide alternate or project-based assessments and assignments

Students with 504 Plans

Provide extended time as needed Modify length of writing assignment Provide short breaks within the lesson Provide scaffolding for students Utilize graphic organizers

UNIT

Unit 3: Measuring Length

UNIT SUMMARY

In this unit, students will...

Continue to solve one- and two-step word problems involving addition and subtraction. They will use concrete models and drawings to develop conceptual understanding of addition and subtraction within 1000. Once again, students will use repeated addition and rectangular arrays to further develop their understanding of multiplication.

Students will select and use appropriate measuring tools such as rulers, yardsticks, meter sticks, and measuring tapes. They will represent and compare lengths on the number line. Lastly, students will use addition and subtraction to solve word problems involving lengths within 100.

NEW JERSEY STUDENT LEARNING STANDARDS MATHEMATICS

<u>Module A</u>:

2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.NBT.B.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.

2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Module B:

2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.

2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0,1,2 ..., and represent whole-number sums and differences within 100 on a number line diagram.

INTERDISCIPLINARY CONNECTIONS

New Jersey Student Learning Standards- English Language Arts:

RI.2.1. Ask and answer such questions as who, what, where, when, why, and how to

demonstrate understanding of key details in a text.

RI.2.2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.

RI.2.3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

RI.2.7. Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

SL.2.2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

New Jersey Student Learning Standards- Science 2020:

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills (2020)

9.4.2.Cl.1: Demonstrate openness to new ideas and perspectives

9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem

9.4.2.CT.3: Use a variety of types of thinking to solve problems

9.4.2.GCA:1: Articulate the role of culture in everyday life by describing one's own culture and comparing it to the cultures of other individuals

9.4.2.IML.2: Represent data in a visual format to tell a story about the data

2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.

8.1.2.AP.1: Model daily processes by creating and following algorithms to complete tasks.

8.1.2.AP.4: Break down a task into a sequence of steps.

8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.

21st CENTURY LIFE AND CAREER STANDARDS

Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success.

1. Act as a responsible and contributing community member and employee.

- 2. Attend to financial well-being.
- 3. Consider the environmental, social and economic impacts of decisions.
- 4. Demonstrate creativity and innovation.

5. Utilize critical thinking to make sense of problems and persevere in solving them.

- 6. Model integrity, ethical leadership and effective management.
- 7. Plan education and career paths aligned to personal goals.
- 8. Use technology to enhance productivity, increase collaboration and communicate effectively.
- 9. Work productively in teams while using cultural global competence.

9.1: P Litera S. T. U. V. W. X. Y. Z. AA.	ersonal Financial cy Civic Responsibility Financial Institutions Financial Psychology Planning and Budgeting Risk Management and Insurance Civic Financial Responsibility Credit Profile Economic and Government Influences Credit and Debt Management	 9.2: Career Awa Exploration & and Training M. Career Awa Planning (3) O. Career Awa Planning (6) P. Career Awa Planning (6) P. Career Awa Planning (9) 9.4 Life Literado Skills A. Creativity an B Critical Thin Problem-solving C. Digital Citized D. Global and Awareness Q. Information Literacy R. Technology 	vareness, Preparation, areness (K-2) areness and -5) areness and -8) areness and -12) cies and Key nd Innovation king and g enship Cultural n and Media	9.3: Career and Technical Education GG. Agriculture HH. Architecture II. Arts,A/V, Technology JJ. Business Management KK. Education LL. Finance MM. Government NN. Health Science OO. Hospital & Tourism PP. Human Services QQ. Information Tech. RR. Law and Public Safety SS. Manufacturing TT. Marketing UU. Science, Technology, Engineering & Math VV. Trans./Logistics
TECHNOLOGY STANDARDS				
 8.1: Computer Science A. Computing systems B. Networks and the Internet C. Impacts of Computing D. Data & Analysis E. Algorithms & Programming 		 8.2 Design Thinking A. Engineering Design B. Interaction of Technology and Humans C. Nature of Technology D. Effects of Technology on the Natural World E. Ethics & Culture 		
ENDURING UNDERSTANDINGS		ESSENTIAL Q	UESTIONS	
 In certain measurement situations, an estimate is very useful. Measurement describes the attributes and lengths of objects. 		 When is estimati measur 	s it appropriate to use ion and/or approximation while ring?	

 Standard units of measurement help people interpret results or data. Learners will relate repeated addition to multiplication. 	 How important are estimations in real life situations? How do I make a reasonable estimate? Why do I measure? Why do I need standardized units of measurement? How do I determine which unit of measurement to use? How do we show repeated addition or multiplication using arrays?
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STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)

Students are learning to/that...

Module A

- Represent and solve one/two step word problems using drawings and equations within 100.
- Use concrete models, drawings, and a place value strategy to add and subtract within 1000, and relate the written strategy to the model/drawing.
- Use concrete models, drawings, and a strategy based on the relationship between addition and subtraction within 100 and then within 1000, and relate the written strategy to the model/drawing.
- Skip count by fives, tens, and hundreds within 1000.
- Use repeated addition to find the total number of objects arranged in rectangular arrays.
- Write a repeated addition number model or a multiplication number model to express the total number of objects arranged in an array.

Module B

- Select appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes to measure lengths of objects.
- Use units of inches, feet, centimeters, or meters to estimate lengths of objects.
- Identify the difference in length between two objects using a standard unit of length.
- Measure the length of an object using different units of measure (ex: inches and centimeters), and describe how those measurements relate to the size of the measurement units.
- Solve addition/subtraction word problems involving lengths of the same units.
- Represent the problem using number models and drawings.
- Use a number line to represent whole numbers as lengths from 0.
- Represent whole number sums/differences within 100 on a number line.

SUGGESTED ACTIVITIES

- Math Centers/Choice Boards
- ST Math

 Desmos Online Activities Partner Work: Measurement Activities (door, desk, chair, etc.) Interactive Powerpoints (Nearpod) Measurement (Length in Inches): <u>https://share.nearpod.com/e/0DSDzPxL0db</u> <u>Determining Length</u> <u>High Jump Competition</u> <u>Frog and Toad on the Number Line</u> <u>Ordering Time</u> Small Group Projects 			
EVIDENCE OF LEARNING			
Formative Assessments: Classroom Discussion Math Message (warm-up) Math Journal pages/Math Boxes Exit Slip/Home Links Checklists Peer Assessment Rubrics Participation and teacher observation Whiteboard Responses Think-Pair-Share		Summative Assessment: Unit Tests End-of-Trimester Test	
Benchmark Assessment: Star 360 Benchmark Unit Benchmarks		Alternative Assessments: Project Portfolio	
INSTRUCTIONAL RESOURCE	S		
Core Instructional Resource: enVision	Instructional Resource: Teacher Crea Nearpod Prese		Supplemental Resources: ST Math Choice Boards Nearpod
INTEGRATED ACCOMMODAT	INTEGRATED ACCOMMODATIONS AND MODIFICATIONS		
Special Education: Provide modified notes and access to extra copies online Provide oral reminders and check student work during independent work time Model skills/techniques to be mastered Check and sign assignment planner Preferential seating Pair visual prompts with verbal presentations Modified or scaffolded homework and classwork Extended time as needed Provide graphic organizers and study guides			

English Learners:

Provide scaffolded assignments and assessments Pair visual prompts with visual presentations Check and sign assignment planner Native Language translation (peer, online assistive technology, translation device, bilingual dictionary) Extended time for assignment and assessment as needed Highlight key vocabulary Use graphic organizers Provide verbal and written directions Preferential seating with a English-speaking peer

At Risk of Failure:

Check and sign assignment planner Encourage class participation and reinforce skills Model skills and assignments Extended to time to complete class work Preferential seating Provide extra help outside of class and 1:1 instruction when needed Communicate regularly with students' other teachers Provide positive feedback for tasks well done Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments

Gifted and Talented:

Pose higher-level thinking questions Provide higher level reading and writing materials for literacy based activities Probe student to extend thinking beyond the text or connect two or more texts Provide alternate or project-based assessments and assignments

Students with 504 Plans

Provide extended time as needed Modify length of writing assignment Provide short breaks within the lesson Provide scaffolding for students Utilize graphic organizers

UNIT

Unit 4: Measurement Data and Data Representations

UNIT SUMMARY

In this unit, students will...

Partition rectangles and circles into equal shares. They will expand their abilities to solve word problems involving money, tell time to the nearest five minutes, and revisit repeated addition and multiplication.

Students will collect measurement data and organize the data in line plots, or picture/bar graphs. They will measure lengths of several objects to the nearest whole unit, or measure one object multiple times to gather data. Lastly, students will demonstrate fact fluency by being able to add/subtract two one-digit numbers within 20 using mental strategies.

NEW JERSEY STUDENT LEARNING STANDARDS MATHEMATICS

Module A:

2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.

2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown to represent the problem.

2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Module B:

2.NBT.A.2 Count within 1000; skip-count by 5s, 10s, and 100s.

2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

2.G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

2.MD.C.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

INTERDISCIPLINARY CONNECTIONS

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RI.2.1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

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- 2. Attend to financial well-being.
- 3. Consider the environmental, social and economic impacts of decisions.
- 4. Demonstrate creativity and innovation.
- 5. Utilize critical thinking to make sense of problems and persevere in solving them.
- 6. Model integrity, ethical leadership and effective management.
- 7. Plan education and career paths aligned to personal goals.
- 8. Use technology to enhance productivity, increase collaboration and communicate effectively.
- 9. Work productively in teams while using cultural global competence.

 9.1: Personal Financial Literacy BB. Civic Responsibility CC. Financial Institutions DD. Financial Psychology EE. Planning and Budgeting FF. Risk Management and Insurance GG. Civic Financial Responsibility HH. Credit Profile II. Economic and Government Influences JJ. Credit and Debt Management 	 9.2: Career Awaen Exploration & and Training S. Career Awaen Planning (3) U. Career Awaen Planning (6) V. Career Awaen Planning (6) V. Career Awaen Planning (9) 9.4 Life Literation (9) 9.4 Life (9) 9.4 L	vareness, Preparation, Areness (K-2) Areness and -5) Areness and -8) Areness and -12) cies and Key and Innovation king and g enship Cultural and Media / Literacy	9.3: C Educa WW. XX. YY. ZZ. AAA. BBB. CCC. DDD. EEE. FFF. GGG. HHH. III. JJJ. KKK. LLL.	Architecture Architecture Arts,A/V, Technology Business Management Education Finance Government Health Science Hospital & Tourism Human Services Information Tech. Law and Public Safety Manufacturing Marketing Science, Technology, Engineering & Math Trans./Logistics
TECHNOLOGY STANDARDS	TECHNOLOGY STANDARDS			
8.1: Computer ScienceA. Computing systemsB. Networks and the InternetC. Impacts of Computing		8.2 Design Thi A. Engineering B. Interaction o C. Nature of Te	i nking Design f Techn chnolog	ology and Humans

D. Data & Analysis E. Algorithms & Programming	D. Effects of Technology on the Natural World E. Ethics & Culture
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
 Analyzing geometric relationships develops reasoning and rationalizing skills. There can be different strategies to solve a problem, but some are more effective and efficient than others are. Real world situations can be represented symbolically and graphically. 	 How are geometric shapes and objects classified? How do I decide what strategy will work best in a given problem situation? How do I use different types of graphs to analyze or solve problems?

STUDENT LEARNING OBJECTIVES (Students are learning to / Students are learning that)

Students are learning to/that...

Module A

- Measure the lengths of multiple objects to the nearest whole unit to generate measurement data.
- Measure the length of one object multiple times to generate measurement data.
- Organize/record measurements in a line plot using whole number units.
- Draw a picture graph and bar graph to represent a data set with up to four categories
- Use information from a bar graph to solve simple addition/subtraction problems.
- Solve addition/subtraction word problems that involve lengths of the same units within 100.
- Use number models and drawings to represent the problem.
- Use place value and the relationship between addition and subtraction to add/subtract within 100 accurately and efficiently.
- Use mental math to add and subtract two one-digit numbers within 20.

Module B

- Skip count by fives, tens, and hundreds within 1000.
- Use repeated addition to find the total number of objects arranged in rectangular arrays.
- Write a repeated addition number model or a multiplication number model to express the total number of objects arranged in an array.
- Identify and draw shapes based on their attributes (ex: number of angles, number of equal faces). These shapes include cubes, triangles, quadrilaterals, pentagons, and hexagons
- Partition circles and rectangles into two, three, or four equal shares and identify them as halves, thirds, fourths.
- Describe the whole as two halves, three thirds, and four fourths.

- Recognize that equal shares of identical wholes do not always have the same shape.
- Tell time to the nearest five minutes using A.M. and P.M.
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using the \$ and ¢ symbols appropriately.

SUGGESTED ACTIVITIES

- Math Centers/Choice Boards
- ST Math
- Desmos Online Activities
- Interactive Virtual Geoboards: <u>https://apps.mathlearningcenter.org/geoboard/</u>
- Partner Work: Fraction Activities
- "My Name in Fractions" project
- Telling Time Extra Practice (can select "to the nearest hour," "nearest half hour," or "nearest 5 minutes"):
 - https://mathsframe.co.uk/en/resources/resource/116/telling-the-time
- Delayed Gratification
- Hand Span Measures
- The Longest Walk
- Saving Money 1
- Saving Money 2
- Small Group Projects
- Interactive Powerpoints (Nearpod)

EVIDENCE OF LEARNING

Formative Assessments: Classroom Discussion Math Message (warm-up) Math Journal pages/Math Boxes Exit Slip/Home Links Checklists Peer Assessment Rubrics Participation and teacher observation Whiteboard Responses Think-Pair-Share		Summative As Unit Tests End-of-Trimest	sessment: er Test	
Benchmark Assessment: Star 360 Benchmark Unit Benchmarks		Alternative Assessments: Project Portfolio		
INSTRUCTIONAL RESOURCES				
Core Instructional Resource: enVision	Teacher Crea Nearpod Prese	ted Materials: ntations	Supplemental Resources: ST Math Choice Boards	

		Nearpod		
INTEGRATED ACCOMMODATIONS AND MODIFICATIONS				
Special Education: Provide modified notes and access to extra copies online Provide oral reminders and check student work during independent work time Model skills/techniques to be mastered Check and sign assignment planner Preferential seating Pair visual prompts with verbal presentations Modified or scaffolded homework and classwork Extended time as needed Provide graphic organizers and study guides				
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At Risk of Failure: Check and sign assignment planner Encourage class participation and reinforce skills Model skills and assignments Extended to time to complete class work Preferential seating Provide extra help outside of class and 1:1 instruction when needed Communicate regularly with students' other teachers Provide positive feedback for tasks well done Encourage student to proofread assessments and projects and ask for teacher proofreading of large writing assignments				
Gifted and Talented: Pose higher-level thinking questions Provide higher level reading and writing materials for literacy based activities Probe student to extend thinking beyond the text or connect two or more texts Provide alternate or project-based assessments and assignments				

Students with 504 Plans

Provide extended time as needed Modify length of writing assignment Provide short breaks within the lesson Provide scaffolding for students Utilize graphic organizers